

IN THE ABSTRACT

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ABSTRACT OF THE DISCLOSURE

A method of forming a doped gate structure on a semiconductor device and a semiconductor structure formed in that method are provided. The method comprises the steps of providing a semiconductor device including a gate dielectric layer, and forming a gate stack on said dielectric layer. This latter step, in turn, includes the steps of forming a first gate layer on the dielectric layer, and forming a second disposable layer on top of the first gate layer. A fat spacer is formed around the first gate layer and the second layers disposable layer. The second disposable layer is removed, and ions are implanted in the first gate layer to supply additional dopant into the gate above the gate dielectric layer, while the fat disposable spacer keeps the implanted ions away from the critical source and drain diffusion region.